IN THE CIRCUIT COURT OF THE STATE OF OREGON
FOR THE COUNTY OF MULTNOMAH

THE ESTATE OF MICHELLE SCHWARZ, deceased, by and through her Personal Representative, RICHARD SCHWARZ, Plaintiff, vs. PHILIP MORRIS INCORPORATED, a foreign corporation, and ROTHS I.G.A. FOODLINER, INCORPORATED, an Oregon CORPORATION, Defendants.	)	Circuit Court Case No. 0002-01376

TRANSCRIPT OF PROCEEDINGS
Volume 30-C

BE IT REMEMBERED, That the above-entitled matter came on regularly for Jury Trial and was heard before the Honorable Roosevelt Robinson, Judge of the Circuit Court of the County of Multnomah, State of Oregon, commencing at 2:50 p.m., Wednesday, February 20, 2002.

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APPEARANCES:

Mr. D. Lawrence Wobbrock, Attorney at Law
Mr. Charles S. Tauman, Attorney at Law
Mr. Richard A. Lane, Attorney at Law,
Appearing on behalf of the Plaintiff;

Mr. James L. Dumas, Attorney at Law,
Mr. John W. Phillips, Attorney at Law,
Appearing on behalf of the Defendant
Philip Morris, Incorporated and Defendant
Roths I.G.A. Foodliner, Incorporated;

ALSO PRESENT:
Mr. Herbert Pallant

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I N D E X

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DR. WILLIAM FARONE:			6	
DR. IAN UYDESS (Read). . . .	36	69	108	112

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FEBRUARY 20, 2002; 2:40 P.M.

DR. WILLIAM FARONE

was thereupon called as a witness on behalf of the Plaintiff and, having been first duly sworn, was examined and testified as follows:

THE COURT: No matters for the Court? Bring the jury, please.

MR. WOBBROCK: We have a matter first.

I don't want to revisit exactly what we talked about, but I do want to get the Court's understanding -- my understanding of the Court's ruling regarding the parameters of this.

You recall we just argued it was our position Mr. Dumas had opened the door regarding the compulsory nature of the documents on the web site. And we were referring to the requirements of the Master Settlement Agreement.

Mr. Phillips then mentioned that I have said several times in front of the jury that these are recently revealed documents. And he said that I said they were recently compelled documents. I have scrupulously avoided that and disagree, as I often have

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during this exercise, with Mr. Phillips. I never mentioned the word compelled. But I would like to ask this witness if the documents that he referred to -- Mr. Dumas mentioned that he goes home and occasionally punches up a ten-digit number on the computer -- if those documents have been recently revealed and were -- and were recently made public. That's all. I'm not going to say anything about compulsion or Master Settlement Agreement or anything like that. And references in that matter have come in unobjected to. I don't think it's a problem. But I didn't want to walk into something and have everybody jumping up and down.

MR. PHILLIPS: He may be right. He hasn't used the word compel. I do remember "recently revealed", and "recently come to light" and phrases of that ilk. All I was suggesting is I thought those were as suggestive or more than whatever suggestion he intuited Mr. Dumas' statement. I don't think using a phrase like "recently revealed" crosses the line.

THE COURT: All right. Thank you, counsel. You may do so.

Bring in the jury, please.

(Jury in.)

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THE COURT: All right. Thank you. Counsel, you may proceed with your redirect examination.

REDIRECT EXAMINATION

MR. WOBBROCK: Thank you, Your Honor.

BY MR. WOBBROCK:

Q Dr. Farone, we're going to go through some of the issues raised by Philip Morris' lawyer. I don't intend to go through everything that you have talked about before, because that would be improper. So we're going to go from one issue to another. And this is what's called redirect examination. You understand that, sir?

A Yes.

Q Starting off with this: Counsel mentioned that you occasionally are able to pull up documents from the web. Are those formerly internal Philip Morris documents?

A Yes, they are.

Q Have they been recently revealed?

A Yes.

Q Were they always available to the public?

A No.

Q Now, Doctor, there has been some talk about the areas of your expertise. You indicated to counsel that -- you said it was for the Court to decide if you were an expert, that you only related your expertise. What did you mean by that?

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A Well, it's very difficult to know what level of expertise qualifies in any particular case. I certainly don't. I'm not an attorney. So all I can do is tell you what I know about a subject. And with some 40 years of experience, I know a lot about different things. Then the Court usually decides whether that's adequate for one to function as an expert in that area. I don't make that determination. I'll just tell you what I know or what my background is, and then someone else usually makes the -- the Judge or the court usually makes that decision.

Q So just to make sure that everybody in this room, including the jury, understands what you meant, when you say it's for the Court to decide, who are you referring to, when you say "the Court"?

A The Judge.

Q The Judge, not the jury?

A Not the jury.

Q Okay. You also mentioned that you have a doctorate in psychology. I don't want to make --

A Philosophy.

Q Philosophy. I'm sorry. I don't want any confusion about that. You don't have a doctorate in being a philosopher?

A No, it's an important distinction. There is -- the Doctor of Philosophy, the reason why it's called that,

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it means that you have been trained -- you have to provide a thesis, and you have to defend that thesis in oral argument against other people. And the reason it got to be called philosophy -- even though it's in science -- is because you can have philosophical differences, so to speak, between different people.

And for other kinds of doctorates, you don't need to defend a thesis. For example, a JD, I think.

Q How about a juris doctorate?

A A juris doctorate, you don't prepare a paper that has to be published and go to peer review.

Q You take a bar exam?

A For doctor of science, for example, you don't need to have a thesis. So doctor of philosophy is a particular kind of degree that goes back centuries that relates to your necessity to stand up in front of a room full of your peers, make a presentation of your work, and essentially survive all the criticisms that they direct at you. And there is a panel of other people that decide whether you have been successful in doing that or not.

Q But just so this jury fully understands, your doctorate of philosophy or Ph.D. -- they reverse the words, I guess?

A Right.

Q They say it in Latin, correct -- is in what

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discipline?
A It's in chemistry.
Q All right. Now, we're talking about the five balls and the 95 balls going down the Columbia. I told you we were going to skip around a little bit.
Mr. Dumas, counsel, asked you what about Burley versus Bright and mouse painting studies and carcinogenicities, less cancer, and you said that's like looking at the five balls. What did you mean by that?
A Well, there is a battery of tests we talked about afterwards: Mouse skin painting; there is in vitro tests, in vivo, inhalation, injection and so on. One of the examples that's frequently used by Philip Morris and other people in the industry is this anomaly when you paint something on a mouse's skin, the amount of salts that you have in there kind of protects the mouse's or rat's skin -- mouse's skin. This has been known for a long time.
When I was at Lever, we knew you could reduce irritation, you could reduce penetration by putting more salt in the material. And the salt that does this, that occurs in tobacco smoke, is nitrates. So if you add nitrates or if you have a high nitrate tar, it doesn't penetrate the cells as well, so you end up getting an effect that is less than you would have in other tests.
That is the one test out of the seven that

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shows Burley to be less active biologically than Bright. The other tests show it the other way around. So that's why it's kind of like the 95 balls versus the -- five balls versus the 95 balls. It's the one that goes the other way.

And I have tried to make the point that's what you have to be very careful of when you look at the facts surrounding these issues of toxicity, that somebody is not talking about five balls; they are talking about the 95.

Q So six out of the seven tests shows greater biological activity of Burley over Bright; is that correct?

A Not only that, the most meaningful test, that is the test of human epidemiology, seems to show that there is a greater effect from Burley, because we use more Burley tobacco here in the United States. And in countries that use Bright tobacco, there is a larger reduction in carcinogenicity, cancer cases, with the reduction of tar.

Q And what type of tobacco is predominantly in the Merit cigarette?

A Merits, I don't know the current blend. At the time that I was there, we made the Merit cigarette have a higher nicotine-to-tar ratio by increasing the amount of Burley compared to Bright.

Q As to that nicotine, counsel asked you as to the pH, which we have talked about for days, and how it effects the nicotine. How does the pH of a Merit cigarette compare

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with, let's say, a Marlboro, regular cigarette?
A It's higher.
Q Just to clear up something so there is no misunderstanding. You testified that you had previously given expert testimony in cocaine trials?
A That's correct.
Q What was that about?
A Some horse trainers in California were accused of giving cocaine to horses to reduce their pain during racing. And I testified on their behalf. I was able to show -- and it subsequently was proven -- that the cocaine was not given by the trainers. It entered the containers that were used to take the urine samples, because less than a few feet away from where the containers were stored there were illegal stashes of cocaine.
So there was 14 of them, actually -- different cases. All 14 of those trainers were able to keep their license. It all happened at the same -- the same -- call it the same stable, stables where the horses were kept at a single race track. And all 14 of the horses at adjacent stables have contaminated vials that were used and all trainers accused of giving cocaine.
Q Just so nobody misunderstands, you were not testifying on behalf of cocaine dealers?
A No way.

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Q Now, Doctor, getting back to the issues that we're really here about, you haven't attempted to offer expertise on any other issues, other than your experience at Philip Morris when you were there and your expertise regarding chemistry issues and applied science issues related to cigarette making; is that correct?

A That's correct.

Q And in that regard, referring back now to when you were there, was there a time when you had serious concerns about Philip Morris' research policies, especially the INBIFO European lab policies, as expressed to you by Dr. Tom Osdene?

MR. DUMAS: Objection, Your Honor. That's beyond the scope of my cross-examination. I didn't get anywhere near INBIFO.

MR. WOBBROCK: It has to do with his dissatisfaction or satisfaction with what was going on there and his relationship with Dr. Osdene.

THE COURT: All right. The Court will allow it. Proceed, please.

A Yes, as I think I indicated earlier, we had differences of opinion on how things should be done right from the beginning.

Q There was a mention that the people in your Division went from 40 to 250 over the period of time that

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you were there. Did that encourage you?
A Yes, it did.
Q Why?
A Because I felt that my approach to -- or what I felt was the best approach to reducing the hazards of this product was gaining headway; that is, most of those divisions, as I think I indicated when we had the charts up, were transferred from Dr. Osdene. So his way of looking at things -- and my way of looking at things -- seemed to me that the company was more and more going along with the idea that we were either going to remove this product from the market or we were going to reduce its toxicity to the point where we felt -- whether the government would or not -- but where we felt internally it was a safe product for people to use.
Q You previously testified that you believed the work that you did in that connection that you just described could have saved eight million lives.
First of all, two questions: In what way, what sort of modifications are we talking about, and how did you arrive at that number?
A Okay. I pointed out that in 1980 we had come out with the Cambridge cigarette, which had essentially zero tar. Now, a lot of us make the assumption that we augment that cigarette with nicotine. Seems like a reasonable thing

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to do. So the people smoking that cigarette -- we put it in the filter so when you suck on it, you don't get tar, you just get the nicotine that you want, maybe a flavor or two. If we had done that in 1980, by about 1982, it was my estimation, that virtually every other company would have done the same thing.

There are approximately 400,000 people a year who die prematurely due to smoking cigarettes. If we multiply 400,000 by 20 years, you come up with eight million. So if, in fact, Philip Morris had pioneered the way to make a nicotine delivery product that had essentially no carcinogens coming out the back end to the smoker, it is my opinion that would have changed the entire nature of the industry. Everybody else would have followed suit, and the problem would have essentially been reduced at least by ninety-five percent, possibly by ninety-nine percent.

The only remaining risk you would have is heart disease, which then you could address by using the nicotine analogs that we also had developed. So we even had an answer for that. So essentially, very quickly, we could have solved the problem, whereas the situation we have, it's 20 years later, death rate is not significantly down, there haven't been any significant reductions in tar since those days.

Q Dr. Farone, what is your understanding about why

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you were not allowed to go through with that kind of technology?
A The greatest fear -- at the time I was there, Philip Morris' product, Marlboro, was achieving the first position. It had been behind Winston for many years. And during my tenure, Philip Morris became the producer of the leading selling product. It is my understanding that no new technology -- nothing would be done to jeopardize what they call that franchise, the franchise that provided them with the most revenue of any other cigarette company.
Q And were there also FDA-related concerns if you went to this other technology?
A Yes, there were, because if you add nicotine to the filter, you are clearly augmenting a product with a drug, and it is possible, even though one could have argued the case, I guess, but it is possible that the Food and Drug Administration would assert jurisdiction.
But on the other hand, in my opinion, the Food and Drug Administration should be aware of the fact that by eliminating the problem, the number of reductions could be at least ninety percent -- I think, my opinion -- I don't know for sure -- but is that they could have gone along with it.
Q Counsel asked you, when you left Philip Morris, were they still trying to develop a safer cigarette? Your

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answer was that's one way of looking at it. What did you mean, "That's one way of looking at it"?
A Well, we have heard that we're continuously trying and trying and trying. Once you realize that you essentially have to remove all the bullets, then after that, the trying is what I call paralysis by analysis. You can make the case that you are trying, but gee whiz, people don't like it. Gee whiz this; gee whiz that. Basically, you know if you have the technology, if you are willing to take the risk on that technology, if you are willing to sell a nicotine delivery device that does not deliver tar, you have the answer. And -- but if you are not willing to take that risk because you think you will lose money, then you continue to say -- try to remove this one. We talked about trade off's. So I reduce A versus B and so on. So I'm always -- looks like I'm headed in that direction, but the facts show people still continue to die prematurely from smoking the product.
Q Is it consistent with that strategy, this paralysis by analysis, to create doubt about the smoking and health issue, whether smoking causes lung cancer, to create doubt without denying it?
A Yes.
Q Counsel touched on a subject about Merits and asked you if the flavor technology was a breakthrough, and

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your response was you were not convinced. What did you mean by that?

A Well, the flavor technology used in Merits at the time I had arrived there was called enhanced flavor. And what they had done was to extract some flavors from tobacco and add it back onto Merit.

But what they also -- what we also did -- which I viewed beneficially -- was we increased the nicotine-to-tar ratio. And the question is, was Merit acceptable because of this, quote, flavor, unquote, or was it acceptable because of having a higher nicotine-to-tar ratio than other cigarettes in that category? And the business of flavor, I like to point out -- cigarettes, the way they are designed today, are meant to be inhaled. And as far as I know, some physiological experience that you may all have had, there is no flavor buds in your lungs. So the question of flavor arises only if two other things are equal. So if I can deliver equal amounts of nicotine, then flavor can be used to go between brands. We talked about this before.

So it appeared if people felt that the flavor was adequate, that that came after a feeling that the nicotine was adequate. So my opinion is now -- was then -- that what we had done with Merit was to achieve equal nicotine delivery, not necessarily equal flavor delivery.

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Q Getting back to the augmenting of the Cambridge cigarette with nicotine in the filter, I'm going to show you an exhibit we have talked about before.

Counsel, this is 275.

This has been before the jury on numerous occasions. I'm going to ask you, Doctor, how does this relate to augmenting the filter of a Cambridge cigarette with nicotine? And if you could point out, without me reading the whole thing, those portions of this document that I read to the jury at least twice now, that relate to that kind of technology?

A Okay. The important sentence is the second sentence in the first large yellow-colored paragraph where it says, "To illustrate, a study was conducted on nicotine aerosols where subjects inhale the same amounts of nicotine at different pH's."

Q Let me see if we can find this -- first of all, I'm going to bring that up a little bit.

So we don't get everybody lost, because I am -- and maybe I'm the only one -- but tell me where I should point. Right here?

A Third line -- go down, third line, to the right. "To illustrate, a study was conducted on nicotine aerosols. This document, I believe, was 1992."

Q Yes, uh-hum.

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A And when I was at Philip Morris around 1980, we also had nicotine aerosols made with glycerine. We experimented with the same thing. You can deliver acceptable amounts of the nicotine in an aerosol, meaning we can deliver it off of something that isn't a cigarette. Okay. So we can put it in the filter. We could suck through that filter and release nicotine.

"And if we also increased the pH" -- which is down at the bottom here.

Q Right in here?

A Where it's yellow. "We found that increased filter pH -- filler pH resulted in enhanced electrophysiological and subjective effects." So if we had a high pH, that is, if we put nicotine in the filter, make an aerosol, when you sucked air through those holes, almost exclusively in the freebase form, where you don't need as much of it to get that kick, then I think we would have come full circle to providing a product that would satisfy a smoker without the cancer-causing materials and without the other toxic materials that are in the smoke.

Q And again, for the record, this is Exhibit 275.

MR. PHILLIPS: Can you say the date again, please?

MR. WOBBROCK: '94. Doctor, this is '94 rather than '92. Make a difference, '94, '92?

A No.

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Q There was discussion about you making a recommendation to your patients about switching to a low-tar cigarette. What did you actually tell them?

A I told them that they should smoke the low-tar cigarette, lower nicotine. I explained to them that they had to be careful to smoke that cigarette so that they didn't smoke more cigarettes per day, they did not suck harder, they did not cover the holes. In other words, I explained to them how they should smoke it. And I pointed out to them that may be a change in what they were used to, but if they could get used to that, then it may be easier for them to quit. And in fact, with my mother, my sister and her husband, brother-in-law, that worked.

Q You mentioned that Merit cigarette and the Cambridge cigarette: How did they compare, the Cambridge that you were talking about? Just make it very explicit for the record.

A Well, the Merit we started talking about is eight milligrams of tar. And it decreases down to, depending which packing you talk about, it goes down to maybe four milligrams. Today there is one on the market that's one.

Q That's Merit Ultima?

A Ultima. But at that time, Cambridge was less than .1 in our measurements -- was actually .01. But at that time the Federal Trade Commission test wasn't precise enough

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to recognize that. So we simply said less than .1 But actually it had .01 milligrams of tar, very little tar. It had .03 milligrams of nicotine, also not recognized by the Federal Trade Commission Test, because they only measure the nicotine that's in the tar. And this was in the gas phase. But it clearly demonstrated what I talked about in terms of producing the nicotine at a higher level with no tar whatsoever was not only possible, but the solution was available at least in 1980.

Q Did they later change the FTC rating in that cigarette?

A In 1986, they increased it from the lowest level of Cambridge, from less than .1 to twelve milligrams of tar.

Q And you mentioned that -- I believe you said today there were three other products that would be available in this range, this lower range, now? Is that correct? Do I have your testimony correct?

A Yes.

Q What are those?

A My understanding is that there is a Carlton Ultima, and that the lowest version of a cigarette called Now is in that range. And it's also my understanding -- I have not confirmed this, but at one of these depositions or trials I was told that Philip Morris has put the Cambridge back on the market again in the extremely low.

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Q Have any of them tried to augment the nicotine in the filter so that people will find these cigarettes acceptable --

A Not as far as I know.

Q -- if they are addicted?

Now, counsel talked to you about perforations and ventilation technology. And his co-counsel mentioned something in -- well, just assume this was mentioned in opening statement. Are you familiar with a Frank Ryan study known as Pandora?

A Yes.

Q There was an argument that people don't actually occlude the ventilation holes, that there was not evidence that was a problem. Have you read the Pandora study?

A Yes, I have.

Q Does it confirm that people not occluding the ventilation holes -- I'm saying this backwards. Was occluding the ventilation holes potentially a problem in defeating the low-tar delivery of some cigarettes?

A It was in this.

Q Can you direct us as we look at this document? This is counsel's exhibit -- and we'll get the number later. But this is a Frank -- 1049. This is January 13th, 1983. And we see here from Frank Ryan to a Mr. McDowell. And you were present when this was going on?

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A Yes, I was. And I point out that not only -- Mr. Ryan worked for Dr. Dunn, who worked for Dr. Osdene, who worked for a Dr. Hausermann, who worked for Mr. McDowell. So this memo spans five ranges of management.

Q First of all, why was this study done at this time?

A The study was done to provide evidence that occlusion was not a problem.

Q Had that been a subject of controversy?

A Well, ever since there was a competitive product put on the market, Philip Morris felt it was deliberately designed to occlude the holes. We wanted to make sure that our products did not fall in that same category, that we were not suffering from excessive occlusion; let's put it that way. We didn't want to be doing something permanently, purposefully occluding the holes.

Q Now, does this sentence, "The incidence of coverage does not seem related to the delivery of the cigarettes" appear to be correct in light of the data we're about to look at on the next couple pages?

A No, it's not. It's the five balls problem again, if you look at the data.

Q What does this show us?

A Well, you can see here that the extent of hole blockage in the first column is about the same. It goes

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from 44 to 65 percent. As a matter of fact, there appears to be slightly more blockage.

Q This is the column right here that you are referring to?

A Yes. But that's not the problem. What we're talking about is delivering more tar. And if you look at the tar and without the holes blocked, Marlboro 85, it doesn't make any difference. Marlboro Lights, it doesn't make any difference. But if you look at the two lowest ones, Cambridge 85 and Merit Ultra Lights, that's an increase of over double for Cambridge and almost double for Merit Ultra Lights. To be comparable, the light one would have had to go from 16 to 32.

So rather than conclude that blockage doesn't create a problem, it creates a tremendous problem in low-delivery cigarettes. The point is you cannot tolerate comparable blocking in low-tar cigarettes. The same amount of blocking creates a much greater amount of tar in low-tar cigarette than it does in a high-tar cigarette.

Q Was there a difference in the amount of -- number of holes in one brand of cigarette than these low-tar brands?

A There is a difference in the number of holes, what we call the efficiency of the filter. That's why this conclusion is very, very misleading. If you are talking

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about why do people compensate? You compensate for more nicotine, which tracks more tar. And if you look at the holes that are blocked, it blocks the same number of holes. That is not the issue.

The issue is blocking the same number of holes dramatically increases the amount of tar. So we have almost double the bullets in the Cambridge 85, going from zero percent blockage to 50 percent blockage; whereas, in the Marlboro, we haven't changed it at all.

Q Counsel talked to you about efforts at laser perforation and the use of reconstituted leaf or reconstituted tobacco, recon, the tape we saw yesterday. Were those profitable modifications?

A Yes.

Q Why?

A Well, in the case of laser perforation, by using the lasers, which we did at three different sites eventually, we were able to save -- at each site it was used -- twenty million dollars a year over the pins that you saw in that diagram.

So, in addition to the effect that it had, it also saved money.

In the case of reconstituted tobacco, that's waste material that you are not normally putting in a cigarette. So if you use that material, you save billions

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in purchases of other, more tobacco. So by using that material, it had a two-fold thing; not only did it help do the things we talked about this morning, but it saved a lot of money and made Philip Morris a lot more money.

Q Were other technologies -- let's just review those a little bit. We talked about N.O.D, naturally occurring denitrification. That was the technology that was intended to make cigarettes safer?

A That's correct.

Q And another one was a nicotine analog that would not have cardiovascular effects?

A That's right.

Q Were other technologies such as those, that would not increase profitability, but would reduce the risk of smoking, were those implemented by Philip Morris?

A Basically no, even the Cambridge that we talked about.

The concern was that you would lose a lot of business, you would lose a lot of bucks if we put the Cambridge on the market, took the Marlboro off, put the extra nicotine in there. You would lose a lot of money. So I'm not going to take that risk. The risks that were taken, if you want to call it that, were those changes that only kept the products as being sold -- what I call transparent to the consumer. The consumer should not notice any

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difference. And it saves you money. Then you go ahead and make the change.

But other changes which would have cost you money, which would not have increased the profitability, which ran the least little risk of reducing your business, then they were not implemented.

Q Dr. Farone, you mentioned in response to counsel's question that at the time there was a discussion with the lawyer, Mr. Newman, in the room, others, I think a Mr. Davis was someone who was mentioned. About this time you mentioned in 1983 -- maybe it was 1984 -- that there was turmoil caused -- I wrote it down -- because of a lawsuit?

A Yes.

Q Explain what you meant by that to the jury, would you?

A Somewhere in late or mid-'83, uhm, a lawsuit was filed against Philip Morris. I don't know whether it's similar to this one. But it was a plaintiff who sought damages from smoking products. It's known as the Cipollone lawsuit.

Q And as far as you knew, was this the first time you became aware of a lawsuit being filed against Philip Morris for injury or death caused by smoking?

A It was the first one that we became widely aware of at Richmond in the R&D Center. There may have been

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others. But this one, for some other reasons, which I wasn't really aware of at that time, was of significant concern to Philip Morris. That is what triggered a lot of what happened, we were told.

Q You also mentioned in response to counsel's question that when you left, you reflected back, and you could see that you were losing the battle regarding the company going forward on issues of smoking and health. What did you mean by that?

A Well, as you probably are aware of by now, there were two schools of thought. Okay. One is that you admit you have a problem so you can fix it. You define what that is -- cigarettes cause disease. The diseases are caused by chemicals. We remove the chemicals, they stop doing that.

The other approach is that you say it's not proven yet. You don't make the changes that you should make on the basis that you are not convinced that you have a problem.

So those are the two. It's accepting the responsibility to make those changes -- running the risk of losing your business, but you accept it, versus keeping business as usual by continuously denying that you have a problem.

Q Just to make it very clear, what school were you in?

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A Well, I came there with the idea that we were going to get out of the business or make it safer. Those were our two choices.
Q And who got the job that you didn't get?
A A fellow named Dr. Kenneth Houghton.
Q And were you aware of his position and what school he was in regarding this issue of smoking and health?
A Yes.
Q Describe for the jury what that was?
A Dr. Houghton was one of the people who felt that it had not been proven that cigarette smoking caused cancer and it had not been proven that cigarette smoking was addictive.
Q Was he one of the guys that you might say looked at the five balls going down the Columbia rather than the 95?
A Yes.
Q And after him who was there?
A Dr. Kathy Ellis.
Q And what was her position on the issue of smoking and health?
A Dr. Kathy Ellis had the same position as Dr. Houghten. Dr. Ellis was a Ph.D. pharmacologist, who said that the proof of addiction was not enough to conclude that smoking cigarettes was addictive. And she also contended

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that it hadn't been proven that smoking caused disease.
Q In your opinion, was she also someone who subscribed to the five balls going down -- that got hung up on the bank of the Columbia rather than the 95 that ended up in the ocean?
A Yes.
Q When you left Philip Morris, Dr. Farone, you mentioned this -- counsel mentioned this. Was the only reason for your termination the issue related to the E.E.O.C. complaint regarding your wife?
A Well, it has been said it's either the major reason or the primary reason or the immediate cause. Undoubtedly, that was the cause of my leaving. The question is whether or not it was desired that both my wife and I leave, since we were unexplainably denied promotions as well as some other people. So there is no difference in testimony here, but if you think about all of the things that happened, you reflect on it, you say, well, since we weren't really told why we weren't getting the promotion, my wife wasn't told -- my wife also, by the way, had admitted that cigarette smoking caused cancer ever since she had worked there and that it was addictive. Her first husband, who I knew, was a pulmonary physician. So there seemed to be a reason beyond just the immediate cause, i.e., the E.E.O.C. complaint, as to why it was desired that both of us

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not be promoted.
Q Did you later come to believe that your outspokenness on the issue of smoking disease and smoking addiction therefore played a role in your termination?
A Yes.
Q Was that communicated to that lawyer, Mr. Newman, that you mentioned yesterday in testimony, your outspokenness in that regard? Was he aware of your position in that regard?
A Oh, that was in -- he was aware of it, but I didn't communicate it to him. These things all happened very close together. I think I testified yesterday about when that happened in April, before I was terminated. But there is no question that the immediate cause of the termination was the complaint, because otherwise, there is no lawyer to go see and there is no insubordination. We would have had a different issue.
Q The General Rule of Product Safety for Manufacturers: This is a rule that is subscribed to by professional organizations that you are a member of?
A Yes.
Q And you first obtained an understanding of this rule under what circumstances?
A Well, when I worked for Lever Brothers, ones concern was what responsibility or liability do I have in a

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position of authority, signing off on all these safety documents, all these documents to go to the F.D.A.? How do I know that I am not going to be in trouble or personally liable for decisions that I make concerning my company's products? So that's why I became aware of it for the first time.

Q Again, Dr. Farone, is this the rule, "General Rule of Product Safety for Manufacturers: "Any risk of serious injury or death is always unreasonable and always unacceptable if technically feasible and economically feasible alternative designs would reduce or eliminate the risk."

Is that the rule, sir?

A That's it. It's paraphrased in many different ways. If you look -- for an example, I mentioned some professional organizations I was a member of. They have a rule that states, "Thou shalt do no harm." It's the first rule of how you act professionally. You never do things that cause harm to other people. This is essentially the business or subjective means of doing the same thing.

Q Dr. Farone, you testified -- and I believe the words you wrote -- stated -- and I wrote them down: "You don't need a government standard" -- this is what you told counsel. "You don't need a government standard to say you shouldn't sell products that kill people." What about

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products that are legal products, like cigarettes?
A Well, you can think of many other products that have the potential for killing people. Recently people may be aware that some types of vehicles, sports utility vehicles, roll over. They are legal products. They roll over. Maybe they had some kind of bad tires that made them roll over more often. If I recall correctly, about 200 people may have died due to those kinds of accidents. Those were legal. The tires are legal. The SUV's are legal. But think about what the manufacturers did. They redesigned the SUV, redesigned the tires, recalled them from the market. That is for 200, 300 deaths.

And here we have a problem that is agreed now kills 400,000 people a year. It's also a legal product, but it hasn't been recalled and it hasn't been significantly redesigned such that -- there have been redesigns, but those SUV's that roll over with the bad tires, they are no longer on the market. You can't buy those tires, and you can't buy that particular combination.

Q How does the solution to this problem of smoking and health relate then -- if you can analogize it to this issue with the SUV's -- to this General Rule of Product Safety for Manufacturers?

A Well, what I have tried to do is to explain avenues that could have been pursued so that you take all

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the bullets out, or as much as you can, get it down safely, and then you provide a salable product with nicotine in it to give you a little better feed. There are products on the market, such as the nicotine patches, the gums. The one that's closest to a cigarette is an inhaler -- nicotine inhaler sold by a drug company. Those products are not designed to make the experience pleasurable. They are designed to help you quit. But products that had the inhaler and you added flavors to it, like we do to cigarettes, that had been tested to be safe, you could have a salable product that would allow people to get through requirement for nicotine -- like putting it in the filter of the Cambridge cigarettes -- without exposing them to the carcinogens, mutagens and teratogens.

Q Finally, Doctor, in your opinion, did Philip Morris meet the standard of care of a reasonable manufacturer in their attempts to develop a safe cigarette?

A No.

MR. WOBBROCK: Thank you, Dr. Farone.

THE COURT: You may step down, Doctor. And you are excused.

MR. WOBBROCK: We now have further evidence, Your Honor, and Mr. Tauman will be directing that.

MR. TAUMAN: Your Honor, we will recall the surrogate Dr. Uydess to the stand.

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THE COURT: All right. Will you retake the stand, please.

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DR. IAN UYDESS,

was thereupon called as a witness on behalf of the Plaintiff and, having been first duly sworn, was examined and his prior testimony was read as follows:

DIRECT EXAMINATION

MR. WOBBROCK: We're starting at page 76, line 17.

BY MR. TAUMAN:

Q Now, give us an idea of the areas that you were involved in on a day-to-day basis. It is one thing to talk about the goal of making a safer cigarette. But what were you, as a scientist with your background, what were you doing on a day-to-day basis? Tell us who you were interacting with on a frequent basis?

A Well, in the beginning again it largely was in the area of structural research and structural, meaning the leaf. This was at a time when Philip Morris and its major competitors, Reynolds Tobacco and others, were learning that instead of now just using cut up dried leaf, that they also engineered to a certain extent in the manufacture of cigarettes, that they could process that piece of leaf, which gets really skinny and flat because of that they call cure. They take the tobacco leaf from the field, which is

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kind of puffy, big cells in it, a lot of air and water, and it's dried down by farmers. And it's done either through a heating process, where they put it in what they call a flue curing barn, where they use a little glass -- gas flames like Bunsen burner to heat the whole barn up, and it dries the leaves fairly quickly. As they dry, the water leaves them and other things leave them, and it gets squashed down.

These companies found if they processed the squashed leaves, the dried leaves, they could blow them back up again. The companies refer to it as a puffing process or expanded is the nicer term or scientific. And by doing this, they could do several things that they liked. First of all, they could take the little shreds, which occupied very little space and blow them up which occupied more space, which meant they could put fewer shreds, which saves them on tobacco. That was a cost effectiveness thing.

They could also -- excuse me. They could make the unit cost of each cigarette less and less and less.

At the same time, which also was a benefit, the tobacco industry was being pressured by the public and the government and the TDA to try to lessen the hazardous qualities of smoke. And so as a second benefit, putting less tobacco into each cigarette meant that the amount of material that went into your lungs was lessened a certain extent by that.

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And so that was kind of a positive thing and actually lead to the products that came out at the time, which was referred to as lower delivery. Other things -- excuse me -- one of the things that led to the things like lower delivery, lower tar -- lower tar, which was also an okay thing in itself. Although these companies learned to do other things to the cigarette to kind of reverse part of that.

So I support the idea -- I was helping Philip Morris look at how the structure changed as they did these various kinds of processing, because there were two or three different ways you could do the puffing, and I worked with chemists.

This is about the time I started to get heavily involved with other departments, like engineering and process development and new product development and analytical research. All of a sudden, I was going outside my own group and working with other parts of the company to look at how you make cigarettes, which is the first step of what I was hired to do.

Q What was your involvement with engineering? How would you get involved with that?

A Well, to do what I was doing, I wanted to know as much as I could about what happens to that leaf over in engineering, because it had to do with how you do the work

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you are going to do.
So I went over to engineering, and I had already learned there were several people who were the senior engineers of the people, a person named Henry Merritt, who was the principal engineer. And I kind of attached myself to him and said, "Henry, can you take me over and teach me the process?" So he led me through the factory one day. It was a wonderful thing, walking tour of the manufacturing center from the very beginning to the very end with the senior engineers telling me basically what went on at every major step.

Q Like a private tour?

A Yeah. Again, I didn't understand and learn and memorize every single step, but I learned a tremendous amount that helped me in my research.

I then became involved with people involved in product development, who are the people that helped formulate the cigarette products, work with engineers and other people. So there were several people there at the time who mentored me and taught me a little bit about what goes on in their division and how they interact with the rest of the company. So I began to see more and more how the company functioned internally, and I began to work better with my colleagues.

Q That was my next question. How, for example, your

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communication and learning about these other departments, engineering process, development and analytical research, impacted your activities on a day-to-day basis?

A It just got me more involved in a higher level of interaction within the company. Instead of working like a laboratory works, like many of us do, you work in a department where, or some place in a company, with the same four or five or six people, and every once in a while, you contact someone outside.

I was now being brought by my management, because Bill Farone and others wanted me to do this. So I was interacting with many, many, more parts of the company to support the work I was doing, part of it, so I could understand what was going on so I could do what I was asked to do better.

Q In terms of the work that you did with projects to develop safer products, could you describe specifically some of those projects, exactly what they involve?

A The earliest of my major projects that actually got started before I left the first time involved the company, Philip Morris, wanting to find a way, a better way, to remove something called nitrate, a chemical, which is in the soil, winds up in the plant and part of most biological systems from the product. It already had a process to do this at one of the facilities, which was called Park 500,

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where they made something called reconstituted leaf or sheet, which I won't get into right now.

In the process, it's kind of like a paper-making process. You take scrap leaves that maybe you would have thrown away because they weren't of the quality you wanted or they were left over from something else, and instead of throwing them away, you press them, add hot water to them, squash them in these giant roller devices, separating the liquid from what's left, which turns out to be just the fiber in the leaf, the cellulose in the plant leaves. It makes a paper material called base web. All of the liquids go over in this direction. A lot of those liquids is what's left in the plant.

They found they could take that liquid and chill it -- that was something they wanted to do for several reasons -- then put that liquid back on this leaf material, the paper, and make a paper-like product, which they could shred up and put back in the cigarettes. So they wanted a better way to do this nitrate removal, because it wasn't as efficient as they would like.

I was really a consultant to it.

Q Excuse me, page 83?

A Excuse me. I'm sorry. Three or four projects sprang up about this time, chemical projects looking at chemistry ways to do this; physics way to do that,

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mechanical ways to do that, using various kinds of filtration devices. Then the area that I was in, biological ways to do it, because there was literature out there in the world about microorganisms, bacteria, yeast, other cells like that, that actually take nitrate in and either remove it from the stuff around them or actually kind of digest it, break it up into something else so that it's gone. And some people at Philip Morris began to look at this microbial way.

Q Microbial meaning what?

A Using bacteria that were resident. I mean, again, leaves come from the field. In the soil there is bacteria in the plant. They are not harmful. Kind of average soil microorganisms. Some of those naturally take nitrate and dispose of it. This was discovered by Teng, Dr. Teng, Daniel Teng, who was one of them.

So we began to explore to use this as a very natural way to do this denitrification and nitrate removal. And that began just before I left. I was really a consultant to it. Because of my background, I was asked to kind of keep in touch with the problem, with the program. And then I left, and that program didn't do really well. And then I came back. And after a short time after I was back, I was asked directly by my director, who was still Bill Farone, to get directly involved in that project.

Q The denitrification program was a fancy name for

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simply the objective being to remove the nitrates?
A Yes.
Q Did Philip Morris have the technology to remove the nitrates?
A A new technology?
Q Any technology?
A They had the one they used, the Park 500, the precipitation technology, which they felt wasn't effective enough. That is why they started all of these other projects.
Q You had involvement in some of the other projects?
A No. I just knew about them through people like Cliff Lilly and other people who were involved in the engineering part of it or the chemistry part of it or whatever.
Q What ultimately became of the denitrification program?
A Well, management, corporate management, decided that based upon the information it had, it thought the biological solution was the one it wanted to follow.
First of all, it was a nifty new technology kind of in this bioengineering kind of an area. Philip Morris liked that, and Philip Morris was recognizing at this time some of its future wasn't just its own chemistry, which engineering and chemistry, which is what it always used in

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the past to do all of the really wonderful things it did as far as engineering cigarettes, sophistication it introduced into manufacturing the cigarettes.

So it decided, based upon the data that we had, that the biological solution looked like the best way to go. There were two projects -- one in Europe and one in the U.S -- which were kind of competing. The one here used bacteria, and the one in Europe used yeast. Given again the results of the data, the corporation decided to go with the bacteria one that was in the U.S. So that is where the focus was.

And we were told -- we were told to sale it up, which means that our experiments out of little beakers and flasks, which is where they were being done, and now put them in these large vats called fermenters, where you can look at what the process might look like if it was real in a factory.

We did that for a while and improved it, got it to work very, very well. There were some problems with it, which you do have whenever you work with something like this that were linked to other departments like the flavor development group. These were sophisticated chemists that made up a lot of the departments. We went along that line for a while and actually built a small plant called the pilot plant to do it. It worked extremely well. People

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used the product. They took the product that was denitrified, put it back on the leaf, this RL and smoked it to be sure it was going to be okay. That went on throughout the whole process with again every once in a while a tiny problem, but then the scientists in the other area said not to worry; we can take care of this.

Then after this very successful run, I think it was about three months where the process worked better than it ever worked in the laboratory, it was terminated.

Then we were told that it was going to be shelved; the company wasn't going to go ahead and use it for product quality reasons, which really surprised me, because there is nothing like what they call this in the pharmaceutical business, a show stopper. There was nothing like that. Then when I tried to find out what was going on, I was told to go back and do my other work. So I was disappointed.

Q Dr. Uydess, I want to have an understanding as to what test results you were actually privy to, what you actually saw and observed. I want to make a distinction between that and what Gullotta may have simply told you over coffee. So tell me about that.

A There were occasions in which Frank would take me back into the second half of the laboratory, the back half, which is where equipment that was used to make the

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measurements themselves, the EG equipment, the computer, things of that nature, and sometimes, because he was so enthusiastic and excited about what maybe he had seen this morning or the previous day, would on occasion show me particular parts of his results, the spectrum, the tracings that came out of the instrument which is the electroencephalogram and kind of talked to me in a general way about things he was seeing, measuring and how excited he was to be able to do these things.

Q The tracings you are talking about, the squiggly lines on brain waves on a piece of paper, a long piece of paper --

A Sometimes a short piece of paper.

Q What was he measuring in relation to the cigarette? What was he measuring? What was the purpose of what he was doing, if you know?

A On many occasions, not all, it was something having to do with nicotine response.

On other occasions, it may have been having to do with some of the flavor he was doing also. But it seems sometimes the more exciting stuff had to do with the nicotine effects.

Q Dr. Uydess, do you know of your own personal knowledge whether there ever came a time when Dr. Gullatta's electrophysiology program was shut down in Richmond,

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Virginia?
A Yes.
Q Was it simply terminated, or was it moved?
A No. It was moved.
Q Where to?
A To Germany.
Q Did it ever return to the United States?
A The project?
Q Gullotta's research project?
A Not to my knowledge, no.
Q Is Gullotta still with Philip Morris?
A As far as I know, yes.
Q Are you still friends?
A Well, as far as I'm concerned we are still friends, but we don't see each other anymore or talk.
Q In terms of your own work at Philip Morris, did you have control over what you have wanted to publish?
A No.
Q How did that work? What do you have to do if you found something very interesting and you thought it would be in the public interest and that the wider community should know about it? What steps did you have to go through before you got permission to publish something outside the in-house publication of Philip Morris?
A Normally, you would mention it informally to your

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supervisor, manager, director that you thought it would be good to do this. They would sometimes say, "Okay, why don't you go ahead and write a draft?" You would write a draft, whatever it was that you thought you wanted to write about, give it probably back to that person, and they would review it. If they thought there was a reason to publish it externally, it would go to a review, an internal review committee. Probably also be looked at by other people in the management chain.

So as an example, if that was my manager looking at what I had written, even though he thought it was okay, he or she thought it was okay, it would go up to the director or something of that nature, also be checked for scientific accuracies, quality and other things.

And then if someone really thought there was a chance it might go outside, a review committee within Philip Morris, other people in R&D would take a look at it to see if they thought it was also appropriate to go out.

Q Do you know whether lawyers employed by Philip Morris, whether in-house counsel or outside counsel, had any input in that process? The process I'm referring to is deciding whether scientific matter should be published.

A Yes, lawyers, attorneys inside the company would interact with you. Many times in the case that I know of -- one of the cases that I know of personally with regard to

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just patent rights and patentability of things, wanting to make sure somebody didn't, in their excitement about something they discovered, divulge information about competitor companies about something that was important to Philip Morris. Frequently, when someone was going to publish a technical article, the internal lawyers, sometimes in Richmond or New York would look at it to make sure that certain things had been done before that thing got published, like patent a good idea or whatever or not mention certain things if the patent had not been issued, just to protect the company in that nature.

Q Did you know a scientist at Philip Morris named Victor DeNoble?

A Yes.

Q Tell me just in general terms the kind of research that he was involved in?

A He again was an experimental psychologist. And his area of expertise was using animal systems, model systems they call it, to test the impact effects, to a large extent, drugs of abuse, things like heroin, cocaine, things of that nature.

And he was brought into Philip Morris to basically bring in that same kind of technology and test system into Philip Morris R&D to do work in that department.

Q Was DeNoble involved in any animal

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experimentation?
A Yes. Most of his work was. He had an animal colony in his laboratory that they experimented on.
Q What types of animals?
A Small rodents.
Q Rats?
A Rats, yes.
Q Were you ever in the facility?
A Oh, yes.
Q Did there come a time when DeNoble's work was stopped at Philip Morris?
A Yes.
Q Was it transferred to Germany, or was that just stopped all together?
A It just stopped.
Q Are you familiar with the term INBIFO?
A Yes.
Q Tell us what INBIFO is?
A Over my eleven years at Philip Morris, as I got more and more involved, more and more things, and I got into the safer cigarette area, which is what I was hired to do, I developed these friendships with people like Victor DeNoble, Frank Gullotta, in particular, people like Tom Osdene, who is the director of all these things that we are talking about. And I began to hear this term, sometimes only

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referred to as Germany, and then as INBIFO. And realizing it was an area I had learned over those few years was kind of a sensitive topic area, I didn't ask a whole lot of questions about it.

But sometimes I asked other people around me, who I knew well, do you know anything about this thing called INBIFO? And I found out a lot of people didn't. And yet as my work progressed and as my friendship with Frank got more extensive, and DeNoble, I learned more about those areas again like Tom Osdene and others, began to hear more and more about the kind of work done at INBIFO. It was essentially a research institute that did a variety of health-related studies, some of them on emphysema, some of them on toxicity and other things like that on animal systems.

So then on occasion, people went back and forth, like Dr. Osdene, to INBIFO, where projects were being conducted for Philip Morris that were not being conducted in Richmond, in the United States, but were being conducted overseas in Germany.

Q Did you ever learn what the criticism was, why certain research would only be done in Germany rather than Richmond, Virginia? And if you did, tell us what source you learned that?

A With regard to my own personal experience, this

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project that we mentioned a while ago that I had suggested to Dr. Osdene -- which he really wanted to do and wanted me to come into his Division to do -- involved using Dr. DeNoble's animals that they were doing these behavior experiments on with nicotine. I wanted to use my background research from the University of Rochester, which was in blood research, immunology and animals to study things -- involved studying how smoking impacted the immunity system of animals. So we could learn more about the impact of smoking on health and other things like that.

Well, Dr. Osdene really wanted to do that. And we were making plans for me to do that with Victor in his laboratory. And then the topic came up, well, you know, this is a little sensitive and we may not be able -- this is from Dr. Osdene. We may not be able to do it here in Richmond. And I said to him that it -- and I said to him, "That is really too bad, because I think it would have been really neat for us to do that." And he said, "It's okay. It doesn't mean we can't do it. We can't do it here. We have to do it in Germany. You may have to go over there and set -- set it up. We can do it, but not here. We will do it over there."

That same discussion happened with other people, that there were areas of research that were considered very, very sensitive that the company wanted to

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remove from the United States, apparently. Like when they took Dr. Gullotta's whole project and moved it to Germany.

Q Sensitive in what sense?

A It had to do with smoking and health or the addictiveness of nicotine. It had to do with these very sensitive issues.

Q To your knowledge, did any scientist at Philip Morris, working in Richmond, request access to studies to the research results that were being conducted in Germany?

A Only one I know of personally from my own experience is my director, Dr. Farone once asked Dr. Osdene because of his own interest. Here was a director doing allied things. He wanted to see some of this.

All I knew at the time was Dr. Farone asked to see data from INBIFO, and he did not. I was told he did not have access to that information by Dr. Osdene.

Q What was the term "ratooning" mean to you?

A That was a practice that was used in agriculture where a plant grows, and you let it grow to a certain extent. Then you kind of whack it off at the base, and it will regrow. Part of that was so that you could get two crops out of the same field.

So if you are growing and harvesting the crop, you could do that and then not go right to the end of the season. But kind of a couple of months ahead of it,

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whack the plant off, let it grow and harvest some more crop. It made it very crop effective for the farmers to do this with certain kinds of crops. Philip Morris thought this was an opportunity to examine things with the tobacco plant. So I began to do some field experiments in various areas in which it studied that, some of which had to do with nicotine or the things like nicotine.

Q Dr. Uydess, just before we broke for lunch, I was going to get into a new area, but I think you were explaining. I had asked you about the concept of ratooning and what that meant with respect to tobacco. I don't think you had finished your answer.

A Again, that agricultural practice had several possibilities, one of which, as I said, was yielding another crop from the same field. So that was economically beneficial for the farmer, you know, to do that.

Philip Morris, I think, had some of that possibly in mind. But what I knew better about that particular study was that one of the target areas had to do with things like nicotine, other constituents in leaves of the plants that were regrown. And because one of my projects had to do with nicotine synthesis in the plant, one of the programs I was asked to head up had to do with how nicotine is made in the roots of the plant and gets shipped to the plant, which is what happens in the tobacco plant.

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And during the growth of the tobacco plant when it is young and the roots are very small and it's just starting to grow, nicotine is being synthesized, and those small numbers of roots are shipping the nicotine to the plant. As the plant grows, tobacco routes became larger; more and more nicotine is going up into the plant.

So one of the questions, scientific questions, that was asked was if we ratoon the plants, cut them back just before they actually reach maturity, and let them continue to grow, generating new plants from that stem that was cut back, would we have a leaf with, say, higher nicotine in it? Is that a possibility? So part of that study -- not the entire study, but part of it -- was to examine those scientific kinds of questions.

Q Any conclusion reached about whether you could increase the nicotine?

A I wasn't privy to all of the results. I saw some of them, the reports. And on occasion what I saw was yes, higher nicotine was what you got in some of the leaves that grew back, which is scientifically what you would expect.

Q You had a pretty good job at Philip Morris, didn't you, for those 11 years?

A I had a really great job.

Q Pay was good?

A Pay, yes.

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Q Benefits were good?
A Excellent.
Q Working conditions were good?
A Wonderful.
Q A lot of people you like, a lot of colleagues there?
A Yes.
Q So what happened in 1989? Why did you get fired?
A No, no.
Q Excuse me, what -- did you get fired?
A No, no.
Q You quit?
A Yes.
Q Why?
A Over those accumulated years, ten and a half, 11 years of being there, being part of directly or indirectly some programs that were designed to try to make a safer product, which is what I was told when I came in the door, this was the area I would be working in, and seeing so many of them never go to completion, just make a lot of accomplishments, be shut down, not used time and time again and really not even my projects -- I'm not talking about me and my projects, just throughout Philip Morris. In this particular area is what I'm talking about, smoking and health, you know -- nicotine to a certain extent, but mainly

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smoking and health to me, which is with my background the most important subject to me personally. And after seeing all these opportunities -- and to me these were missed opportunities -- I mean, you may not.

Q Missed opportunities for who?

A For the public, for consumers at Philip Morris and other tobacco companies' projects, but mainly Philip Morris, who I work for. But they had all of these opportunities to not have the perfect solution, yet maybe could introduce one of these many programs they had at their hand into production and at least offer one cigarette product on the market and keep it there, not let low market share deter them, keep it there, much like the Coca Cola industry. When they came out with decaffeinated colas, I kind of remember when decaffeinated colas came out, I didn't like them. I don't think they really had a big market share, but they were put out there to offer an alternative to people who wanted a healthier product without caffeine. I'm sure those companies weren't sure that was the right decision then, and they did it.

Over the years, it became very popular. It was beneficial to the public. And over the years, I kind of felt that is where we were going; that is where I thought Philip Morris was going.

Q Was there a particular incident or event which

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convinced you that that is not where Philip Morris was going?
A Yes. I guess. I guess I would have to say there was. In addition to all of these various programs, many of which were not mine, where other people's programs that were not being utilized in any fashion as far as I could tell. One day --
Q Such as?
A Oh, the various nitrosamine extraction procedures that were being investigated and things like that, ways of controlling nicotine delivery. Just through chemistry and physics of the cigarette, without playing these additional games to kind of bring you back up to above where most people thought it was, you know.
Q I was asked --
A I was asked to give.
Q Your part?
A That's my part. I was asked -- I was asked to give a presentation at one of the few talks at what they call the symposium, the Synergy Symposium.
Q Was a particular incident or event which convinced you that was not where Philip Morris was going?
A Yes. I guess I would have to say there was, in addition to all these various programs, many of which were not mine, were other people's programs, were not being

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utilized in any fashion, as far as I can tell.
Q Whoops. I think this is repeated. I'm sorry. Let me start over.
A I can pick up at line 12 on 107. It should be just a little more.
Q Please.
A Was asked to give a presentation one of the few talks at what they call the symposium, Synergy Symposium, trying to bring all the companies together, all of their R&D scientific people together, kind of say, look, we are all part of the same team. Let's talk a little bit about what we each do and how we can pool information in the future.
So, they selected scientists from Kraft, General Foods and Philip Morris, and I was fortunate enough to be one of the people they asked and gave a talk.
We were up at General Foods in Westchester outside of New York for several days doing this, and it was great. On the way back, on the corporate plane, I was with my executives, the management team, Charles Lilly and others. I believe Houghton was there. And they began talking about the industry, about what their goal as executives at Philip Morris was. And it was really just tied to market share and money. I just realized on the plane that they weren't interested in using a lot of the technologies available.

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Q To make a safer cigarette?
A Yes. I just felt like if I was going to spend my efforts working in this area, that I probably should work somewhere else and very hesitantly decided that I needed to leave, because I just was very disappointed scientifically in the company's decisions and morally felt that it was right and ethically. I just decided on the plane that the next few weeks, the next couple months, I would find another way -- I would find a way to find other employment.
Q And you followed through on that?
A Yes.
Q Now, when you left Philip Morris in 1989, did you -- did you start calling lawyers and telling them that you were an unhappy former Philip Morris employee? Did you volunteer your services to testify?
A No.
Q So what was your next? You quit in 1989. What was your next involvement with the tobacco industry, directly or indirectly?
A One day I came home while I was being employed at Pharmaco, which was the -- that we kind of alluded to before, the pharmaceutical type of company. It doesn't make drugs or pharmaceutical products, but it's one of the companies that are out there. And there are several like them that help the pharmaceutical companies test their

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drugs, make sure they are tested properly to get approval to put them out to market.

I had been with them for a year or so, and came home and had a voicemail, a voice message on my phone.

Q During the 11 years that you were at Philip Morris, had any of your projects which were in any way related to the development of a safer cigarette ever come to fruition?

A Be put into a product to make a --

Q Yeah.

A A product that was sold to the public?

Q Correct.

A No.

Q Dr. Uydess, during the 11 years you were at Philip Morris and with particular reference to the time of your decision to leave, in terms of the work that you were doing and in terms of the area of expertise during those 11 years, what was the paramount consideration of Philip Morris?

A Market share, market share and money.

Q Did you learn that nitrosamines are, in fact, being extracted from the product?

A Yes, in a variety of ways, some better than others. Again, that is what Philip Morris did, examined every possible way to do something. It didn't go off in a direction looking one way to do something, because that is

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dangerous. You may not make the right choice. So scientifically, it was doing what you would do, explore the three, four, five, whatever ways to do the same thing and then choose the best way.

Q When we look at a Philip Morris document or hear an expert refer to, for example, lowered biological activity or the concept of biological activity as related to a cigarette, what are you scientists talking about? How is that term being used?

A Well, directly. I mean, to me as a scientist, especially coming out of a medical background, a biological activity is kind of a polite term used in science to talk about potential toxicity or carcinogen -- carcinogenicity, excuse me, the ability to cause cancer or the ability to poison or hurt yourselves. So,rather than label it one way or the other, I kind of use this umbrella term, biological activity, which means the activity, the thing you are testing has a biological testing, has a biological system or of a biological system, whether it's part of a cell, a dog, a rat, a human, whatever. So it's kind of a generalized term, but it means health impact on the system. That is a term we use within Philip Morris.

Actually, one of my programs was the umbrella of a lowered biological activity. That was part of what we were trying to do.

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Q Who is Dr. Frank Gullotta and what was the kind of work he did at Philip Morris?
A Frank Gullotta is a very gifted scientist who I met at Philip Morris, came around the same time. I don't remember the exact year Frank came. I don't remember if he came there just before me or just after me. I think he may have been there a year or so.
He was in the behavior group, which happened to be right next door to me at the time. That group did a lot of things, but they were a group that interacted with a lot of the studies and products being tested in the field, test groups when the company wanted to test market in various parts of the country a new product. They were psychologists, pretty much all of them, at the senior level, were degreed people in experimental psychology, including the director of that group, Bill Dunn, who had been at Philip Morris quite a while. Frank was in that group.
And as Philip Morris decided it wanted to learn more and more about why certain people reacted the way they did to certain kinds of products, which up until then companies like a lot of the other companies would ask the consumer, why do you like product A? Why do you like product B? And the consumers would tell you why. Some of that is really hard to interpret and would really frustrate a company like Philip Morris, becauses we all used different

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terms to talk about what we feel, what we think.
So they were looking at at a more objective scientific measurement they could make as to kind of go along with those other things they normally did.
But it was based on not asking someone something. They could measure it, electrophysiology, something called EEG's, when they wire you up and look at electroencephalograms is used in other research to look at changes in electrical activity of the brain, which is where we think, which is where we think and make decisions about stuff. They decided to explore that to see if they could -- see if that could be used to look at a lot of things, flavor. Why, when you taste something, you like it, don't like it? How things may impact how we function mentally, which is part of the test. So someone smoking can be looking at something on a TV screen or does that enhance what they were doing or distract from it?
So, Frank was there to investigate all these things, which he began to do. And that grew into a major project on its own, which again looked at a lot of other things, which again looked at a lot of things like flavor to things like nicotine.
Q So Dr. Gullotta was a psychologist?
A Very excellent scientist and experimental psychologist and a very, very close friend of mine.

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MR. PHILLIPS: Your Honor, might I recommend for myself and others, say, 30 second stretch?

THE COURT: Let's make it 45 seconds.

MR. PHILLIPS: I'll accept that amendment, Your Honor.

THE COURT: All right. I guess we're ready to on.

CROSS-EXAMINATION

BY MR. PHILLIPS:

Q Good afternoon, Dr. Uydess. We met very briefly this morning. And I'm going to be asking you some questions on different topics that you talked about. And I'll try to kind of let you know where I'm going so you know what I'm talking about. Okay?

A Yes, thank you.

Q Now, I want to go to -- I want to move to a different area now. I want to go to an area that I believe you said you spent a lot of time on, and that is in your work at the -- and that is this area of naturally occurring denitrification. Since I don't want to say naturally occurring denitrification all the time, can we call it N.O.D.?

A Yes, that is what we called it, N.O.D., because nobody wants to say denitrification.

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Q I want to make sure the jury understands that this N.O.D. -- strike that, rephrase. I want to make sure that the jury understands what this N.O.D. process was. And let me ask you this as a start: How much of your time do you think you spent on the N.O.D. project?

A Well, in the beginning, as I mentioned before, I left the first time, I was kind of a consultant to it. I was kind of keeping in touch with it, but not participating directly because it was a microbiology project.

Q Sure.

A In that point in my career at Philip Morris, the last year before I left, the first time, a few hours a week. When I came back, fairly soon after I came back, because the program was not doing well, I started to do some side experiments and got involved even though I really shouldn't have done them. But then I showed that data to my manager, director, Dr. Farone. A decision was based on that work -- a decision was made based on that work that the program needed change, and I was actually assigned to take over that project. So for the next couple years, or whatever it was, I spent full-time, almost full-time every day on that project.

Q So was it an important project for you?

A Not just for me, for the corporation.

Q All right.

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A The Philip Morris project was important to the corporate entity.
Q What I meant is you were really invested in the project personally?
A Personal time is -- was one of the jobs I had at Philip Morris.
Q You cared about it, didn't you? You cared about your work?
A We all, I hope, care care about our work, yes.
Q All right. So if you were spending almost full-time on it, you would obviously want it to succeed; did you not?
A I wanted it to succeed, and it did succeed. Scientifically, technically, it was a success.
Q We're going to get to that, but I want to make sure that the jury understands what it was. And I'm going to try to describe it, and if I fault in my simple way -- fail in my simple way of trying to describe it, maybe you'll help me out. Okay.
Now, what it was is there are microbial agents -- did I say "microbial" right?
A That is good.
Q That is pretty good. That is a good start. That naturally occur in tobacco, right?
A Because they are in the ground. There is

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microorganisms. They are in the dirt, and they wind up in the plants.

Q And despite all of that, we have been talking about for many weeks, even months now, tobacco is still just a plant that grows from the soil, right?

A The tobacco plant, itself, before anybody touches it, yes.

Q That is right?

A Yes.

Q So when it grows from the soil, it absorbs things from the soil?

A Yes.

Q So these microbes, the idea behind using the microbes, as I understand it, is that microbes -- do you remember when the computers first came out and they had little pac men?

A Yes.

Q Do you remember that?

A Yes.

Q Microbes are like pac men, right? They would eat the nitrates?

A Right.

Q I would draw this, if I could.

A No. I understand it. Yes, they utilize nitrate as part of their energy system.

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Q Okay. And the evolution here is that the process that you scientists were involved in was to evolve the nitrates -- with an "ATES" on the end -- to be nitrites -- I mean, this is the successive process, right?
A It's a cascade of events.
Q Cascade of events is a good word.
So the first part of the cascade of events was to take the nitrates, and then they would go into nitrites, and then it would cascade further into nitrogen oxide, right? And then the last event would be into nitrogen gas, which would just kind of -- what would be a good word, vaporize?
A Basically, just go off as gas.
Q Okay. So if the system works, if the system works, the great thing about it is when you get the little microbes who work and digest the nitrates and start this cascade of events going in place so that at the end you kind of turn everything into nitrogen gas, which blows off and it's a great success, right?
A Yes.
Q Now, prior to the time you began working on this process, Philip Morris actually did have a process for removing nitrate, right?
A Yes.
Q That would be the crystallization process?
A Yes, at Park 500.

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Q And the concern, Philip Morris' concern, is that while crystallization -- and you described it earlier this morning, Doctor -- while crystallization did get rid of a fair number of nitrates, it didn't get rid of all of them, right?

A Correct.

Q And what percentage do you think they did?

A I honestly don't remember. I think it varies quite a bit, which I think is another thing they didn't like, because it wasn't consistent. It also didn't get rid of the nitrite in between one of the other things they wanted to improve.

Q They wanted to improve it?

A Yes.

Q Because they were trying to get rid of the nitrites, and this process that you worked on very hard and very well, I'm certain, was intended to do that. It was intended to do a better job?

A Yes. It was one of the several attempts that were being evaluated by the company to do this.

Q Okay. That's fair enough.

So now this intent here was to have a commercial process. And what I mean by commercial process is one that you could put and work on the production line in the factory so that it would -- it would work in the actual production

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of commercial cigarettes, right.
Q Or correct?
A Excuse me.
A Yes.
Q And for something to be used in that kind of application, where you are going to actually take it and take it on the production line, the process does have to be controllable; does it not?
A Yes. And that again the production line in this instance was at Park 500.
Q I understand that. Your answer?
A I'm sorry. It's important to know that it wasn't the manufacturing center.
Q Park 500 was the place where reconstituted tobacco leaf was being made, right?
A Yes, yes.
Q So since that reconstituted tobacco was being used in lots of Philip Morris products, it was important to be able to put it into a commercial application. And you understood that, right?
A Yes. This was -- that was one of the goals of the project, to make sure that it worked.
Q Sure, sure. And if it wasn't controllable -- and I want to talk a little bit with you about what that controllable meant -- if it wasn't controllable, then you

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couldn't use it in the commercial application, right?
A Right. And that is exactly what we had to prove in the laboratory before anyone would allow us to do anything else with that process.
Q And, in fact, you got to the point not only where you proved it in the laboratory, where you got it going, but you built the pilot plant for it, right?
A Yes.
Q Okay. Now, the pilot plant, just so the jury knows, a pilot plant is just like a -- what would you call it, a mini?
A A small factory.
Q It's like a miniature factory?
A Small, but it's not the size of the room, but it's not the size of the whole production center.
Q It costs a lot of time and money to make, but it's not the whole production thing, right?
A Right.
Q In fact, a lot of time and money was spent in this process, correct?
A It was very important to the company.
Q Right, very important to the company. Now, some of the things that have to be controlled when you are using this microbial agent, that is, are the temperature at which the bacteria are held. Would that be one?

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A Yes.
Q And the time, the time components of holding it, occasionally in the laboratory you would run into problems, would you not -- I'm not suggesting you didn't get past them, but you run into problems that the little --
A Guys.
Q Pac men, the little pac men or bugs, they would start eating the nitrates, and then they would stop?
A As in the development of any new process, you always are trying to work out problems that come up while you are trying to finalize that process and develop it, yes.
Q When that happens, sometimes you would wind up with a buildup of nitrites, right?
A Sometimes, yes.
Q And of course, that is the last thing you want -- you would want to have happen was for nitrites to build up?
A Absolutely.
Q Okay. So you had a number of years of experimentation. And you got to the point where you were in the pilot plant with it and you would get some very low nitrogen compounds, right? In other words, you would get that working. You would get that thing working in the pilot plants, you know, where the system was -- to use your word; I thought that was a good word -- cascading in the way you wanted it to?

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A Yes, the process in the laboratory, before it went to the pilot plant, it was scaled up in these internal fermenter vessels about this big, many of them ran for months. And typically the target was zero nitrates, zero nitrate, everything go to gas. And there was zero as far as we could measure.

Q Okay. But while you were in the laboratory, you would occasionally have problems with what you would call the start up and the stopping. And you can't have that in a commercial application, right?

A Until we could learn to control that better in the beginning, yes.

Q Now, were there also -- am I right, Doctor, there were also problems. There was an odor problem with some batches of what I'll call the SEL?

A Uh-hum.

Q The strongly-extracted liquor that the microbes would be in, you would have some odor problems with that; isn't that right?

A Yes, occasionally.

Q And the company worked with its flavor person. Is that Howard Spielburg?

A The chief flavor chemist of the corporation world wide, Howard Spielburg.

Q All right. And the fact that Howard Spielburg was

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brought in to try to deal with the odor problem also showed how important?

A He wasn't brought in to deal with the odor problem. He was a natural part of the team that was overseeing the development of the project.

Q But odor was a problem, and one way to deal with the odor was to use flavors, right?

A Possibly, or to develop the process better, so you don't.

Q Don't have odor?

A Don't have that problem very frequently, which is one of the things that we did.

Q Now, the odor, part of the odor that was associated with the use of this bacteria was a smell like rancid butter and fecal matter, right?

A Most people identified it like smelly old gym socks.

Q I don't know which is worse.

A I don't either.

Q But it was not a pleasant odor, right?

A It could be a fairly strong kind of old locker room, athletic sock kind of smell that was identifiable in certain kinds of organic acids that can be made.

Q And things like odor, they are considered part of what we call subjectives, right?

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A Oh, yes. Product acceptability can be dependent upon something like that, which again we were very aware of during this whole project.

Q Now, I want to show you just a few reports that were being issued during this period of time that were dealing with some of these subjects.

A Okay.

Q So I'm going to start, and I think I'll start with the Defendant's Exhibit 1037. I'm sure you are familiar with these reports, Doctor.

A Thank you.

Q You are welcome.

Doctor, I have handed you Defendant's Exhibit 1037, which we'll mark for identification Defendant's Exhibit 1037. And it's dated March 19, 1982. And what I would like you to do, Doctor, is this was -- this was a report from Mr. Gomes to Mr. Burnley. Maybe you could tell us who those gentlemen were?

A Roger J. Gomes, to tell you the truth, I don't remember Gomes. The names are familiar, but to tell you the truth, it has been so long I have forgotten what people were doing in certain stages. It has been so long.

Q I understand that. But this was a project status report, right?

A Yes. I think it was an early one. Again, I'm not

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sure of the exact dates, possibly before I got involved with it. I don't know.

Q Well, the date here is March 19th, 1982. Had you returned?

A Oh, yes. I didn't return and then immediately go into N.O.D. It was -- I don't remember how long, a year or so. I just -- I just notice I'm not on the distribution list, which is kind of interesting.

Q Yeah. So it may be that you hadn't started back on the project yet. It's possible?

A It's possible. I mean that project had been going on since the late '70s.

Q Yes.

A Under different people, different stages with different organisms, different microorganisms being used to do this work. And when it didn't work very well, that's why I was assigned to the project, to help find out what the problem was.

Q So if one set of microorganisms didn't work, then they would try another set to see if they worked -- that worked better?

A Well, there was a set that was there, the ones that naturally occurred on the tobacco. But within those organisms are many. And in the beginning, people thought it was one. And in the early years of the project, everybody

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was focusing their attention on one or two organisms that did part of the work and sometimes went to gas and sometimes didn't and sometimes did and sometimes didn't. And it was causing tremendous confusion.

Q And -- excuse me. That's your line?

A It turned out to be not only -- excuse me. And it turned out to be not the only organism. So this may have been during that period of time.

Q Okay. So just take a look at the first page under project status?

A Which page is this?

Q Right behind the cover page.

A Okay.

Q And it says: "Object, to present an overview status of the N.O.D. project for management review." And it says, "Nowhere the project is as of that point in time"

A Okay.

Q It says some favorable things, denitrification by bacterial fermentation stage has been achieved in the pilot matter. Follow along with me.

A Yes.

Q Under numbered paragraphs, then you get to 3, it says, "Consistent denitrit -- I'm sorry. Consistent denitrit -- denitration results have not yet been achieved in the pilot facility.

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Now, is it your recollection when you joined the project as of that point that they had not been able to get consistent denitrification results?

A I see now that this was actually done in the pilot program, which is even more interesting to me, since I wasn't on the distribution list. But nevertheless, partially true, because actually, over the three months it was being run, except for a few -- I think a few occasions, one or two where the incoming SEL material, that bacteria, were gobbling up the nitrate and poisoned, the fermented. It came in, and everything stopped because of the SEL. It was made at Park 500, which was a problem inconsistent in the ways in which SEL was made, except for a few of those occasions, and one power failure, as I remember the process, as it ran faster and faster and more efficiently, it was running basically at zero nitrate/nitrite. So yes, the statement that was inconsistent is partially true, but not really reflective of what was going on.

Q Okay. This writer thought that it was true as of this point in time, right?

A Yes. Again, it's interesting. There was an engineering company associated with this called Pedco. Philip Morris hired an outside expert engineering company that did this kind of stuff, and they were part of the whole project. And during this whole period, they were -- they

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originally predicted, they didn't think this would work early on in the lab, and then became believers by the time it was scaled up in the laboratory.

And one of the proponents said, "Let's go to the pilot plant and engineer it. They worked with the Philip Morris engineers to help build the pilot plant. And during this period, they were very happy with the way this was running.

Q In fact, it says in paragraph 4, "Successful process start up has been repeated in the lab several times, but only once in the pilot plant." Do you see that?

A I don't think that is accurate. And I wish someone had shown it to the people who were actually conducting the work, and it would be nice to have that input from the people on line doing the work. None of these people who were on this distribution list had anything to do with running that particular project.

Q Well, Mr. --

A That doesn't ring true. That doesn't ring. I don't think that is perfectly true, because to start the whole project in the pilot plant, actually start the process running, we had to start it at once. There were a couple of planned shutdowns, because we needed to test. In the manufacturing center, one of the things you have to know is sometimes you have to shut down equipment to fix it, to

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clean it, to make sure it's going to work next week. So we purposefully would shut down the process so we could show we could start it up again. That process was patented by Philip Morris. That is one of the patents issued was this process of saving the material that you just did, using it as the start-up material again. And we showed we could do that virtually every time we did it.

And so during the three or whatever months in the pilot plant, my recollection is that it was started up a number of occasions. And since it did run for three months with a couple of failures, because of the SEL coming in or power failure that happened one weekend, we had to have started it up again anyway. So I don't understand that statement.

Q Okay. That's okay. But Dr. Uydess, you don't have any reason to think that Mr. Gomes would be trying to mislead Mr. Burnley, would you?

A Oh, No, not intentionally. I would be surprised at that.

Q All right. When you look at Mr. Whidby as one of the people who got a copy of this, was he involved with the project at all?

A Dr. Whidby was, I guess, at the time, my manager.

Q So you would expect that if he thought this was wrong, he would have said something about it, right?

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A Since at this period in my career I have to go back a little. During these several years of this development work, aside from my -- as I talked about my meeting with Dr. Gullotta, Dr. Farone, Cliff Lilly -- who I think may or may not have been Dr. Lilly, Mr. Lilly -- and I would meet virtually every morning at about seven o'clock, sometimes with Howard Spielburg and sometimes with Jerry Whidby to discuss the process as it was going from the lab to the pilot plant but especially the pilot plant.

Q So these would be people that you would feel confident would know what was going on with the project. Can you give me their names again?

A Cliff Lilly.

Q Cliff Lilly?

A Almost every morning Cliff Lilly, Dr. Farone, myself and sometimes also right after that Jerry Whidby, sometimes Howard Spielburg, again during which time we would review what had gone on on the previous today. I would assume if somebody had some concerns or hesitation, they would have brought it immediately, because they knew what we were going toward. You were talking about a major capital investment by the corporation to do this project. We all were.

Q Probably millions of dollars?

A Yes, tens.

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Q Tens of millions of dollars?
A Maybe more. So we were all very, very careful about the results, the quality of the process, being sure as best we could, identifying the areas where there were problems and trying to overcome this. And this was an ongoing part of this process.
Q All right. Item No. 6 on here says, "Excessive levels organic acids are unacceptable cause of the odor and taste they introduce to the product."
A Uh-hum.
Q And then they go on to say, "Subjective testing is in process on sheet runs made with SEL denitrate in the pilot plants during February 1982 to determine acceptable acid levels."
My question to you is this: The question is the odor you mentioned earlier -- I think you called it smelly sock odor -- was it a function exclusively of the organic acids?
A Would you repeat that, please?
Q Yes, I'm sorry. It was a bad question.
A No. I was reading just a little bit to see where.
Q The odor that you and I talked about just a minute ago?
A The off smell?
Q The off smell, whatever.

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A That occasionally occurred?
Q Right. That was exclusively a function of the organic acids?
A One of the major contributors for some organic acids; one being this thing called butyric acid, which is this smelly sock type of smell.
I need to point out this also happened. It happened at Park 500. That same occurrence happened there independent of the denitrification process.
Q Okay. Now, I want to show you another report that followed this report, and this one you will remember because it's from you. So if I --
A Again, I'm a little confused about when this actually -- I see this sentence. Some of this material was made during the denitrification rub in the pilot plant in February of '82. There had been earlier studies on kind of a fixed reactor with this older process, which didn't work really well all of the time.
Q Right.
A Which again is what I think this is talking about.
Q This is dated, the one that we just looked at, that you were handed, is dated March 19th, 1982, right?
A Yes.
Q Okay. Let me show you, if I may --
A Can we?

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Q Yes, please.
A Thank you.
Q That document which has been marked for identification or is being marked for identification as Defendant's Exhibit 1059?
A Thank you.
Q Now, if you will take a look at the -- I know you can't read the cover page. I can't either. But the second page refers to a special report. And is that your signature?
A Yes, it appears to be.
Q Okay. And this report is dated August 29th, 1983.
Now, when is it, Doctor, that this report that denitrification, naturally occurring denitrification, to use your words, shut you down, or counsel's word?
A Again, the dates are kind of fuzzy to me. The final process, the lab process that we all developed at that time, went to the pilot plant. I believe ran over that summer, June, July, August, that was '83. Then it was shut down right after that.
Q Okay. Now, would you take a look at, by the way -- it says Ian Uydess?
A Yes.
Q RLD. Did he work with you on the project?
A Yes. He was one of the team, had been there all

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the time and actually did a tremendous amount. He managed the evening shift when we had evening shifts, and really had been just a long-term player in the development process.

Q Okay. And it says, "Approved by JW." That is Jerry Whidby that you mentioned above?

A Yes.

Q Was he your immediate supervisor?

A Yes, at that period of time, he must have been. That is why he signed the report.

Q Now, if you will go to the -- I guess the page that says, "Introduction". It is the page right before the drawing. Are you with me there?

A What page is that again? The page right before the drawing of the bacteria?

Q Yes.

A Okay.

Q Now, in the first sentence of the second paragraph, you write: Over the past six months, we have made significant advances in our understanding of the major operational and process parameters of N.O.D. And then there is a parens, five, six, close parens. What does that refer to?

A That must be referring to other reports that somebody had written.

Q Okay. Then it goes on to say, "However, one of

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our greatest problems has been in gaining a better understanding of the critical parameters regarding seed storage and a consistent process start up." And then it goes on to explain that. Do you see that?

A Yes.

Q And you concluded that paragraph by saying, "Although considerable light has been shed on this topic as a result of the receptor experimental observations of the N.O.D. laboratory and Dr. Hempfling, et. al, for a complete understanding of the relationship between relative efficiency of denitrification and the variability of our SELS lies somewhere in the future. Is that what you were writing? Let's see, what date is this, August, the end of August, 1983?

A Yes.

Q And you hoped to develop a complete understanding of the relationship between the relative efficiency of denitrification and the very variability of SELS; did you not?

A Yes. We hoped that with continuted experimentation, we would learn more about the process, and it would work better as a result.

Q Where was Dr. Seligman in this hierarchy at the time?

A He had been the vice-president of R&D at that

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point in time. I don't think he was any longer.
Q But he was senior to you?
A Yes. When I came to Philip Morris, he was Dr. Farone's immediate supervisor, Vice-President of R&D and several levels above myself.
Q Okay. Did you know at that time who Dr. Gaisch was?
A Yes, I did. I didn't know him at the time. I understood he was a researcher in Switzerland at Philip Morris R&D headquarters there, Helmut Gaisch.
Q Helmut -- you are absolutely right -- was a pretty senior scientist?
A I really don't know what level he was.
Q Bear with me for a second. (Pause.)
Page 25, line 11, is that where you are?
A I have line 25.
Q That's for you. Let me take a moment, Judge.
Okay. I just got this marked incorrectly. I apologize.
So beginning in the introduction.
A Mine says -- it must be paginated wrong. I'm sorry.
Let me show you another document. Since I have only two here, I thought I handed it to you before we took our break, but maybe I didn't.

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Now, Doctor, you identified who Dr. Seligman and Dr. Gaisch, the senior scientists in Switzerland, and this document dated 11 -- I'm sorry, the 12th of September, 1983, is Dr. Gaisch essentially saying that he reviewed the N.O.D. paper, and it's his statement about how what he thought as of that point in time. And I would like to go over that with you. He wrote, "I had a good look at the N.O.D. paper, which contains a lot of information that had been compiled before. In the introduction, the authors say, for example, a complete understanding of the relationship between the relative efficiency of denitrification and the variability of our SELS, S-E-L-S, lies somewhere in the future. That's referring to your sentence in the report, right?

A In the introduction of the report.

Q He said, quote, The most important feature of an industrial process is its controllability. Parameters which spring to mind are temperature, pH, specific nutrients, et cetera. I know that the process runs, and I know that biochemically the interactions between two cultures are rather complicated. Where I see a problem -- but I might be wrong -- is how to keep the process on the rails, unquote.

Now, you understand when he is referring to about how to keep the process on the rails, he means how to keep it working for a commercial setting, doesn't he?

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A I guess that's what he meant. I never discussed this with him. So no, I assumed he meant to keep the thing working.

Q Then he goes on to say: For example, what do you do if the startup does not happen? Or what do you do if suddenly you accumulate the wrong metabolites? However, the people who work with the system must have a feeling of how well they can control it. They are the only ones who can really judge. Now, the people that work with the system are the group that you referred to several times now, right?

A The Richmond, the U.S.-based project team.

Q At some point, you have to make a go or no-go decision based upon what you believe is the right thing to do at the time, right?

A Yes.

Q Now, let's go to Dr. Gullotta, the idea of testing smoke for a brain wave response, the use of electrophysiology for this purpose. That was the general concept was well known by the scientific community before Dr. Gullotta started doing this work, right?

A As Bright as Frank is and talented, he didn't invent this whole area, no.

Q All right. I didn't mean to suggest that he did. I'm sure you would expect Dr. Gullotta would use the prior work in the literature for testing smoke for brain wave

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responses as a basis for going forward with his work, right?
A You always want to know what's in the literature before you start a piece of work.
Q Okay. Good. You are aware there was published literature on this whole subject of brain wave response to smoke back at the time that Dr. Gullotta was doing his work?
A Generally there was some. Again, it wasn't my particular field, but yes.
Q In fact, there was a whole -- there was a whole published international symposium upon the EEG effects of nicotine back in 1978, weren't there?
A Oh, I don't know.
Q You weren't aware of that?
A There was -- in 1978? That's nice. That's good.
Q You are not aware of that at all?
A No. Frank may have mentioned that to me, and it may have been on his desk, but, no, again, this is 20 years ago, yes.
Q When Dr. Gullotta was doing his work, you were -- did you say you were next door to him, or did I get that mixed up; it was somebody else?
A No, I was at that time just before.
Q Where were you in relation to him?
A I was on the third floor next to Behavior Research

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where he started. But sometime -- I don't remember when, when Carolyn Levy, who was at one time in that group and involved and went to New York, there was some reorganization of space and there were people in R&D moving around like you do. You move around to offices; wound up on the fourth floor, because they wanted him to have a totally separate laboratory for his work. So they built that laboratory on the fourth floor rather than in with the rest of the stuff on the third floor -- which is where Dr. DeNoble was and Bill Dunn and others.

Q I think you said this morning that Dr. Gullotta in doing his tests was testing for -- for nicotine response in the brain, and he was also testing for flavor response in the brain, right?

A Yes.

Q Okay. So, for example, he would take a vanillin compound, which has a flavor, and would test to see whether people had a brain waive response to vanillin, his work, right?

A Yes. They wanted an objective technical measurement, scientific measurement that they could correlates someone saying, yes, I like it more than the thing that I had before. And if they put a little more vanillin, I think it is called --

Q Vanillin is how you pronounce it?

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A Vanillin is the chemical. It is vanilla.
Q It is vanilla?
A They would do it that way so they had a measurement, not just what someone said; how much do you like? A little bit more. They had a measurement they could go back to.
Q They were trying to objectify it?
A Yes.
Q There had been published literature on, for example, brain wave response to what you get in a cup from caffeine, right?
A A whole lot of things, sure.
Q He was looking at things like citrus smell and nicotine and vanilla and other things?
A Menthol.
Q He was doing it all, right? Okay. He was actually able, as I understand your testimony, to measure brain wave responses for different flavors and smells, right?
A He was able to measure a response having to do with a nerve in the tongue or mouth or throat being stimulated by something like -- by something like that, among other things, that he was looking at, like nicotine, yes.
Q And the interpretation of a flavor occurs in the

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brain. So you would expect to get an EEG response, correct?
A Everything we do is interpreted in the brain.
Q Okay. And you believed it was appropriate or not inappropriate for Dr. Gullotta to be doing his work, didn't you?
A Oh, yes. It was again excellent work. Frank took what was known in the literature -- and this is again something that Philip Morris did frequently and one of the things that I admired about the company, one of the things that disappointed me, ultimately why I left -- had the capability to take what was out there, to take knowledge that was at the forefront of it's field of the day, bring it in-house and make a massive step up in a year, because they had the horsepower to do it, the talented staff, the money, the facilities.
And over a short period of time, they would take what the rest of the world did and, without the rest of the world knowing about it, would all of a sudden go, swoop, like this, and do work that no one else in the world that I knew could do.
Q And in fact, they had I think you said -- I believe it was you who said they had 600 people doing research and development work of various kinds?
A When I first got there, around 600, 650. It varied a little bit. Yes, they had -- not just in R&D.

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They had -- I don't know what the number of people in Richmond was. They had a lot of talented people.

Q Those talented people worked on lots of different projects like some of the ones you mentioned this morning, expanded tobacco?

A Right.

Q Filtration?

A Yes.

Q Ventilation of filters and N.O.D.?

A Yes.

Q All kinds of projects that were part of the research and development effort at Philip Morris?

A Yes.

Q And one of those things that you mentioned, by the way, was reconstituted leaf tobacco. You talked about that -- just a smattering this morning. I just want to clear up one thing about that.

You are not aware, are you, Doctor, of any nicotine being used in the reconstituted tobacco manufacturing process other than the nicotine that came from the tobacco, itself, that was used in the process?

A That's correct. The only nicotine that was resident, as far as I know, or would expected at Philip Morris -- I mean, I remember that report back a number of years where the spiking of nicotine out of a bottle -- I

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mean, Philip Morris would never do that as far as I know. Yes, whatever is in the leaves that gets squished out, this liquid extract concentrated --

Q Yes.

A -- was what was put back, the amount depending upon how they recombine all this stuff. So they had control over how much they put back on the sheets. So in that context, yes.

Q So within that context, what you are saying is they didn't add extraneous nicotine?

A No. It was the nicotine that was originally resident, whatever leaf products they were extracting.

Q As far as you know, these allegations of spiking are not true.

A Yes, it was nothing. And it was nothing. I ever expected a company like Philip Morris to think of, let alone do.

Q You are not aware of Philip Morris using reconstituted leaf to adjust the nicotine upwards in any commercial product that it actually used?

A I'm not sure what you mean by upwards. It was my understanding that sheet could be used and was on occasion used to obtain a certain targeted level of nicotine in the final product. That was part of the efficacy of that process. That was part of the use of the process. It's not

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just a filler, just a space filler, but a way to introduce what you wanted to introduce to the product.

Q Okay. But my question to you, Doctor, is whether you are aware whether Philip Morris ever actually in a commercial product, with a specific commercial product, whether it ever adjusted nicotine in some way by adding nicotine to make it higher? You are not aware of that, are you?

A Again, I'm not sure how you are using the word "higher". I mean, if you look of amount of nicotine that was resident on the sheet at any one point in time, it could be varied by the way you handled the process. I mean, there were times where it could be at the lower level, and there were times when it could be at a higher level. Whether this company used that process to intentionally always make sure that the sheet had a massively high nicotine level to put in the product, I don't know if that ever occurred.

Q Okay. Let me see, because I'm concerned that we're -- we may be confused here a little bit. I want to just show you a page from your deposition and make sure you are talking about the same thing, okay?

A Okay.

Q So we will take a minute, Doctor. I'm going to hand it to you.

A That's fine. This is the deposition of --

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Q Yes, yes. In this case.
A Okay. Yesterday.
Q Right. This is a very timely deposition. This is a deposition that took place yesterday. And the question mainly -- it was confusing, the question that was asked. It's on page 44, Doctor. I am asking whether you are aware whether Philip Morris used RL?
A Excuse me. Where on the page? Where do I look?
Q I think it's at the bottom. Let me take a look.
A Down here?
Q Yes, line?
A Line 2.
Q Right. The question is I'm asking you whether you are aware of whether Philip Morris ever used RL -- that's reconstituted leaf, right -- to adjust nicotine upwards? Not whether it could be done, whether it was done. And you answered, not with regards to a specific product in which that was done.
Now, is that essentially you are not aware of any specific product in which --
A Right, which is kind of what I said.
Q Right.
A I'm not aware whether Philip Morris ever loaded up this sheet with a tremendous amount of nicotine and introduced it into a marketing -- marketable product. I

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mean 6They wouldn't have done that for a lot of reasons, but no.

Q You mentioned the word ratooning, R-A-T -- just hold it up there, just put it up on the Judge's desk. I think you explained that ratooning is when you cut off the leaf before it is fully grown, cut off the plant.

A You cut the plant off fairly close to the ground, maybe just above the bottom few leaves.

Q Okay. I just had a question for you on ratooning. Am I right, Doctor, just so we can get by this area, you don't know whether any leaves produced through ratooning ever got into production of any cigarette at Philip Morris?

A No, I don't. I was only aware of it during the research phases of those projects.

Q And the research phases, they were simply looking at the various aspects of what happens when you ratoon tobacco, right?

A They were doing field experiments to look at a number of criteria; one of which was nicotine production in the new leaves that grow up after.

Q Sure, because when you cut them off like that, a lot of things change. Sugar can change, right?

A A number of things can change.

Q They were looking at everything that changes when you do that?

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A I'm not sure it was everything. But they were -- they had certain targeted components, sugars, certain waxes, flavorants, and nicotine was high on the list.

Q That was an experimental phase and as far as you know was never used in the commercial process?

A As far as I know, it was just possibilities.

Q Doctor, you have given your time to come here today, and I understand the fee you are charging for your testimony is $1,200 a day. Is that approximately?

A Something like that, only because it's taking time out of my normal functions with my clients.

MR. TAUMAN: We'll make it.

THE COURT: Very good.

MR. TAUMAN: Your Honor, may I stay here? This is going to be very brief.

THE COURT: Sure.

RECROSS-EXAMINATION

BY MR. TAUMAN:

Q By the way, did I understand you to say that in other cases where you have given testimony, you didn't charge?

A No, I did not want compensation; nor was I offered it. I happened to -- I'm now an independent consultant, and I have to earn my living -- not that I didn't earn it before.

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Q Is this document consistent with the attitude and discussions of scientists on the subject of addiction during your 11 years with Philip Morris, or is it inconsistent with what you heard?

A I'm sorry. Would you repeat that one time?

Q Yes. I'm asking you if this document, which says that nicotine is not addictive, is merely a reinforcer, is consistent with what scientists were saying in your presence in your discussions with them in meetings you attended during your 11 years at Philip Morris?

A No, not totally, no.

Q Now, you said that one of the reasons that you quit was because the paramount consideration of Philip Morris was market share and money. What ingredient in cigarettes was the key to maintaining market share?

A The bottom line, nicotine.

Q Did the N.O.D. project fail?

A No, as far as I knew it was technically successful. It may have needed a few things that could have improved it even further. But as far as as what I was told by my management, outside contractors who were experts, other people at Philip Morris, chief engineers, it was successful.

Q Now, I believe you mentioned something about the R&D headquarters in Switzerland. Now, was INBIFO in Germany

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also considered to be R&D headquarters? Was that something else?
A That was totally different.
Q Now, the letter that counsel referred to -- the letter that counsel referred to from Dr. Helmut Gaisch, dated September 12, 1983, Dr. Gaisch was with the R&D section of Neuchatel, Switzerland; is that correct?
A Yes.
Q Was there a valid -- based on everything you learned during your tenure at Philip Morris, was there a valid scientific reason for killing the N.O.D. project?
A Not that I was aware of.
Q Was there a valid scientific reason for killing Dr. Gullotta's research or sending it to Europe?
A Scientific reason?
Q Yes.
A Not that I was aware of.
Q Was there a valid scientific reason for killing Dr. DeNoble's research?
A No, not that I was aware.
Q Toward the end of counsel's questioning you were having a discussion about the general level of science at Philip Morris in terms of the qualifications of the scientists, which you said was very high, and they made advances. You said, quote, where they made these advances

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without the rest of the world knowing about it, end quote. What did you we mean by that?
A When Philip Morris decided to use the current technology and explore it for possible use inside, it wanted to elevate, raise the level of science and quality associated with that, so it could have a corporate advantage. Sometimes we use that word to develop a new and novel -- to develop new and novel information, which it didn't particularly want anyone else to know about. So it kept it.
Q Kept it secret?
A Kept it secret, yes.
MR. TAUMAN: Thank you.
THE COURT: All right. You are through. You may step down.
And members of the jury, you did so well day you have tomorrow off. So leave your notebooks in the jury room. Be back in the jury room Friday morning at 8:55. Don't discuss the case with anyone.
(Jury out.)
Counsel, Friday morning at 9:00 a.m.
MR. TAUMAN: Thank you, Judge. It's a holiday for us, but probably not for you.

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STATE OF OREGON)
) ss.
County of Multnomah)

I, Estelle T. Keating, Official Court Reporter of the Circuit Court of the State of Oregon, Eleventh Judicial District, certify that I reported in stenotype the foregoing proceedings in the above-entitled case.

I further certify that my stenotype notes were reduced to transcript form by Computer-Aided Transcription under my direction.

And I further certify that pages 1 through 114 contain a full, true, and accurate record of my stenotype notes.

Dated this 20th day of February, 2001, at Portland, Oregon.

_____
Estelle T. Keating

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